VPDES PERMIT PROGRAM FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a **minor municipal** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq. The discharge results from a publicly owned domestic sewage wastewater treatment plant serving Staunton River High and Middle Schools. This permit action consists of reissuance of the permit for a term of five years with updated special conditions, and with limitations on pH, biochemical oxygen demand (BOD_5), total suspended solids (TSS), ammonia as N, dissolved oxygen (DO), E. coli bacteria and total residual chlorine (TRC). (SIC Code: 4952 - sewage treatment & 8211 - elementary and secondary schools)

1. **Facility Name and Address**:
   Staunton River High School STP - No. 1 Golden Eagle Drive, Moneta, VA 24121

   Location: North side of Route 24, northwest of intersection with Route 801, east of Meads Store, Bedford County, Virginia

2. **Permit No.**: **VA0063738** Existing Permit Expiration Date: August 7, 2010

3. **Owner:** Bedford County School Board, P O Box 748 (310 Bridge Street), Bedford, VA 24523
   Owner Contact: Mr. Dennis W. Overstreet, Maintenance Supervisor (540)586-1045 ext. 237

   Operator: Bedford Co. Public Service Authority, 1723 Falling Creek Road, Bedford, VA 24523
   Operator Contact: Mr. Elmer Handy, Operations Manager (540)586-7679 ext. 103

4. **Application Complete Date**: September 29, 2009

   Permit Drafted By: Susan K. Edwards, Environmental Engineer Sr. Date: June 22, 2010
   DEQ Blue Ridge Regional Office - Roanoke

   Reviewed By: Kip D. Foster, Water Permit Manager Date: June 30, 2010

   Public Comment Period Dates: July 7, 2010 through August 6, 2010

5. **Receiving Stream Name**: Unnamed tributary to Shoulder Run (River mile: 0.95)
   Basin: Roanoke River Subbasin: Roanoke River Section: 5a
   Class: III, Non-tidal Piedmont Zones Waters Special Standards: PWS
   7-Day, 10-Year Low Flow (7Q10): 0.0 MGD 7Q10 High Flow Months: none
   1-Day, 10-Year Low Flow (1Q10): 0.0 MGD 1Q10 High Flow Months: none
   30-Day, 5-Year Low Flow (30Q5): 0.0 MGD Harmonic Mean Flow: 0.0 MGD
   30-Day, 10-Year Low Flow (30Q10): 0.0 MGD
   Tidal: No 303(d) Listed (2008): yes & no, see 13 below
   Attachment A contains a copy of the January 2000 flow frequency determination memorandum.

6. **Operator License Requirements**: none

7. **Reliability Class**: III

8. **Permit Characterization**:
   ( ) Private ( ) Federal ( ) State (X) POTW ( ) PVOTW
   ( ) Possible Interstate Effect ( ) Interim Limits in Other Document

9. **Wastewater Treatment System**: A description of the wastewater treatment system is provided below. See **Attachment A** for a copy of the flow diagram from the application package and the site visit report.

Discharge Description

outfall	Discharge sources	Treatment (unit by unit)	design flow
001	The sewage treatment plant (STP) processes domestic wastewater generated by approximately 1250 students, faculty and staff	18,000 gal. septic tank, 16,000 gallon EQ tank, rotating biological contactor, clarifier with skimmer, nitrification reactor, soda ash for pH adjustment, chlorine disinfection, baffled chlorine contact tank, dechlorination and cascade aeration steps	25,600 gallons per day

10. **Sewage Sludge Use or Disposal**: As a septic tank/RBC/nitrification reactor treatment system this facility does not generate "sewage sludge", but does generate "septage" from the septic tank. A VPDES Sewage Sludge Application Form was submitted in the application for VPDES permit reissuance package. The permittee contracts a local septic waste transporter for disposal of septage from the septic tank of the wastewater treatment facility currently to the Western Virginia (Roanoke regional) Water Authority Water Pollution Control Plant.

11. **Discharge Location Description**: The facility is a wastewater treatment system serving a public school with a gravity sewage collection system. The treatment plant is behind Staunton River High School, on the north side of Route 24 just west of its intersection with Route 801 and approximately 1.4 miles east of the community of Meads Store, in Bedford County. The discharge is down a steep embankment from the plant over the cascade aeration steps to an unnamed tributary to Shoulder Run. A portion of the USGS topographic map, which indicates the discharge location and other items of interest, is included in **Attachment A**. There are no significant (large) dischargers to the receiving stream or water intakes within the immediate area.

    Name of Topo: Goodview (078B) Discharge: N 37°14'40", E 79°37'35"

12. **Material Storage**: All chemicals used at the treatment plant are stored inside the treatment plant building. No materials are stored uncovered in a location that exposes them to rainfall, which might present a risk of reaching State waters.

13. **Ambient Water Quality Information**: The receiving water body is an unnamed tributary to Shoulder Run which is a tributary to Goose Creek in Section 5a of the Roanoke River basin as listed in the State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-450). The Staunton River HS STP falls into the Roanoke River basin Middle Goose Creek/Bore Auger Creek/Wolf Creek watershed (VAW-L21R). In the 2010 Water Quality Standards inadvertently left off the PWS designation, but the PWS applies. The 2008 List of Impaired (Category 5) Waters, lists the VAW-L21R waterbody as impaired due to bacterial contamination. The discharge is not within the impaired segment of the waterbody. The bacterial impairment caused the segment to fail to support the Clean Water Act recreation use goal in a portion of Goose Creek. The 2008 Fact Sheet for the segment is provided in **Attachment A**.

    At the 2000 reissuance of the permit, the flow of the receiving stream at the point of discharge was considered zero. The stream at the point of discharge is depicted as a dry ditch that drains to an intermittent/dashed line on the Goodview USGS topographic quadrangle for the area. The DEQ Office of Water Quality Assessments and Planning prepared a Flow Frequency Determination Memorandum dated Jan. 24, 2000. The flow frequencies for dry ravines and intermittent streams are 0.0 cfs for all critical flows. As noted in the Flow Frequency Memo, the USGS topographic map indicates the point where the flow becomes perennial at the confluence of the unnamed intermittent receiving stream with Shoulder Run. Flows at the perennial point were determined using proportional drainage areas with a continuous record gage near the discharge. A copy of the memo is provided in **Attachment A**. There has not been any site-specific flow monitoring for the discharge. No additional information is available that would cause this flow frequency to be superseded.

14. **Antidegradation Review and Comments**: Tier I _X_ Tier II ____ Tier III ____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier I, or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier II water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier II waters is not allowed without an evaluation of the economic and social impacts. Tier III water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving waterbody, UT to Shoulder Run is not listed for exceedance of water quality criteria. As an intermittent stream it is not expected that the water quality is better than the standards, thus, the unnamed tributary is determined to be a Tier I water. Therefore, existing uses of the water body and the water quality to protect these uses must be maintained. Water quality based permit limits are written to be better than or equal to the water quality standards.

The waterbody segment at the perennial portion of Shoulder Run in VAW-L21R, Middle Goose Creek/Bore Auger Creek/Wolf Creek, is not listed on Part I of the 2008 303(d) list as a Category 5 (Impaired) Water or on the 303(b) Water Quality Assessment Report. There is no data to indicate that the existing water quality is not meeting the narrative and numeric criteria. As such the perennial portion of Shoulder Run is classified as Tier II waters, and no significant degradation of existing quality is allowed.

For purposes of aquatic life protection in Tier II waters, "significant degradation" means that no more than 25 percent of the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10 percent of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated.

The antidegradation baseline for aquatic life and human health are calculated for each pollutant as follows:

Antidegradation baseline (aquatic life) = 0.25 (WQS – existing quality) + existing quality

Antidegradation baseline (human health) = 0.10 (WQS – existing quality) + existing quality

Where:

"WQS" = Numeric criterion listed in 9 VAC 25-260-5 et seq. for the parameter analyzed
"Existing quality" = Concentration of the parameter being analyzed in the receiving stream

These "antidegradation baselines" become the new water quality criteria in Tier II waters and effluent limits for future expansions must be written to maintain the antidegradation baselines for each pollutant. The outfall 001 discharge is existing and there is no indication of any proposed increase in the discharge of pollutants via this outfall. As the facility is not proposing any increase in the loading of any pollutants over historical levels, permit limits are in compliance with antidegradation requirements set forth in the Water Quality Standard Regulation, 9 VAC 25-260-30. The antidegradation review and associated effluent limits analyses, below, were conducted as described in Guidance Memorandum 00-2011, dated August 24, 2000, and comply with the antidegradation policy contained in Virginia's Water Quality Standards set forth in 9 VAC 25-260-30.

15. **Site Visit**: Date: May 25, 2010 Performed by: Susan K .Edwards
Attachment A contains a copy of the site visit memorandum.

16. **Effluent Screening and Limitation Development**:

In accordance with the August 8, 2005 VPDES permit effluent has been monitored for flow as well as compliance with pH, BOD_5, TSS, dissolved oxygen, ammonia and chlorine limitations. Effluent limitations and monitoring requirements are based on Federal Effluent Guidelines 40 CFR 133, Virginia's water quality standards (9 VAC 25-260-5 et seq.) (specifically DEQ Guidance Memorandum 00-2011), the previous permit, the VPDES Permit Manual and best engineering judgment. See **Attachment B** for a summary of discharge monitoring data.

Effluent testing data submitted as part of the application was reviewed to determine if there is "suitable data" for analysis. Suitable data is that which is quantifiable and for which there are water quality standards in the state. The evaluation is of parameters that are not currently limited in this permit to assess the need to include limit as part of this reissuance. With a design flow less than 40,000 gallons-per-day the facility was not required to perform water quality standards monitoring during the permit term in accordance with agency guidance.

Application Data - All application data submitted except for temperature are limited in the permit and will continue with this reissuance. The data submitted demonstrates compliance except with ammonia that continues to occasionally be a problem.

A. **Mixing Zone** - The receiving water body is an intermittent tributary to Shoulder Creek. A mixing zone analysis cannot be done because there is no flow to mix at the point of discharge. Mixing zones may be allowed in perennial waters, provided the antidegradation requirements for the waters are met. As the plant is not expanding at this time, no mixing analysis is performed.

B. **Effluent Limitations for Conventional Pollutants**

Flow - The treatment plant has a design capacity 0.0256 MGD. Treatment plant flow is not limited but is estimated daily based on average student population at 8,300 gallons/day and reported monthly.

pH - Limitations for pH are **6.0 S.U. minimum** and **9.0 S.U. maximum** according to the WQS 9 VAC 25-260-50 as a Class III Piedmont Zone Waters and Federal Effluent Guidelines' secondary treatment requirements (40 CFR 133). Monitoring is once per discharge day by grab sample.

Biological Oxygen Demand (BOD_5) and Dissolved Oxygen (DO) - The BOD_5 limits have been continued from the previous permit that were based on a dissolved oxygen model that predicted at critical conditions a discharge of 21 mg/l BOD_5 .6.0 mg/l dissolved oxygen (DO) and 0 mg/l total kjeldahl nitrogen (TKN) would result in instream DO of < 5.0 mg/l. A model run using **19 mg/l BOD_5**, 5 mg/l TKN and **6.0 mg/l DO** resulted in a prediction of no water quality standard violation. A TKN limit was not include in the permit because the ammonia limit is 2.0 mg/l and agency procedure recommends an assumption of 2-3 mg/l refractory TKN above the ammonia concentration. Sampling frequency for both BOD_5 and DO is once per discharge month of a grab sample. In addition, the facility is to meet a minimum technology based requirement for 85% removal efficiency for BOD_5. See **Attachment C** for a copy of the DO Model files and support documentation from the 1995 reissuance.

Total Suspended Solid (TSS) - Secondary treatment standards as mandated by the federal technology-based guidelines (40 CR Part 133.102) are applicable to the TSS limit. Effluent limits of **30 mg/l** as a monthly average and **45 mg/l** as a weekly average are required for TSS. Analysis of TSS is monthly of a grab sample. In addition, the facility is to meet a minimum technology based requirement for 85% removal efficiency for TSS.

E. coli – The Water Quality Standards (WQS) which became effective on February 1, 2010, included updates to the bacteria standards and disinfection policy in 9 VAC 25-260-170. The bacterial water quality monitoring in freshwater is of E. coli measured as a calculated monthly geometric mean less than 126 CFU (colony forming units)/100 ml. Sampling is at once per week there is a discharge by grab sample. Chlorine is used for disinfection at this facility followed by dechlorination. Final effluent TRC is discussed under the Toxics heading below.

C. **Effluent Limitations for Toxic Pollutants** - There is no "suitable data" for any parameters that are not currently limited by the permit. The 2000 permit reissuance limit evaluation for ammonia and chlorine was in accordance with agency guidance in effect at the time, #93-015. As an intermittent discharge to an intermittent stream limits are based on meeting acute water quality standards at the end of the discharge pipe. An updated wasteload allocation (WLA) spreadsheet (MSTRANTI draft k) was prepared using new standards for ammonia and chlorine. pH and temperature values for the effluent were assumed as the same as the previous reissuance WLA spreadsheet. The receiving stream temperature and pH are the same as the effluent as the effluent is all the flow during critical flow

conditions. A reasonable potential analysis was performed using STATS.exe for ammonia and chlorine. Copies of these are included in **Attachment B**. In accordance with DEQ Water Division Guidance on Preparing VPDES Permit Limits, GM# 00-2011, there are no loading limits on toxics parameters.

Ammonia - At the 2005 reissuance a reevaluation of the reasonable potential for exceedance of the Water Quality Standard for ammonia was performed based on Guidance Memo #00-2011. The evaluation used the acute WLA from the 2005 MSTRANTI(k) spreadsheet for ammonia and a single data point of 9 to force a limit using STATS.exe software. The evaluation determined that a limit is not needed to protect water quality. However, the 2000 permit requires a limit that anti-backsliding regulations prohibit removing the limit because the result is not based on "new information" but on a change in the standard for ammonia. Ammonia limit of **2.0 mg/l** as both a monthly average and daily maximum is continued. Sampling is to be performed once per discharge month of a grab sample.

Total Residual Chlorine (TRC) - The treatment plant uses chlorination as the disinfection method. In addition to requirements of use of chlorine for bacterial disinfection, chlorine is limited as a toxic. The chlorine limit was reevaluated based on the December 10, 1997 change to the water quality standards for TRC and on Guidance Memo #00-2011. The evaluation did not use the WLAs spreadsheet, but used the acute WLA of 0.019 mg/l and a single data point of 20 to force a limit using STATS.exe software. The limit evaluation would allow a toxic water quality limit of 19 µg/l maximum weekly average and monthly average. However, the 2000 reissuance set the limits at **0.010 mg/l** as a **maximum weekly average** and **0.008 mg/l** as a **monthly average**. Anti-backsliding precludes relaxing limits already in effect. Therefore, the existing limits are brought forward. Analysis is daily of a grab sample. The Special Condition for internal monitoring for disinfection is included in Part I of the permit.

Other Toxics - No other suitable toxics data is available. In accordance with Agency guidance, continued monitoring for water quality standards parameters is not necessary.

Basis for Effluent Limitations

PARAMETER	BASIS
Flow	NA – monitoring only
BOD/TSS	2 - Secondary Treatment (40 CFR 133)
pH	2, 1 (40 CFR 133)
TRC	2
Ammonia	2

1. Federal Effluent guidelines – cite CFR
2. Water Quality-based Limits: - show calculations or cite WQM plan reference
3. Best Engineering Judgment: - provide narrative rationale
4. Other (e.g. wasteload allocation model): - specify & document with model output or WLA from TMDL or basin plan

17. **Basis for Sludge Use and Disposal Requirements**: A VPDES Sewage Sludge Application Form was not submitted with the application package. Staunton River HS STP contracts the transport of the septage on an as-needed basis. The septic tank and equalization basin were last pumped in August 2009 with material taken to the Western Virginia Water Authority WPCP.

18. **Antibacksliding Statement**: The anti-backsliding requirements set forth in 9 VAC 25-31-220.L.2.b.(1) of the VPDES permit regulations address acceptable circumstances when water quality based effluent limitations may be made less stringent when a VPDES permit is reissued. All limitations are as stringent as the previous permit. Accordingly the anti-backsliding provisions of 9 VAC 25-31-220 L are satisfied.

19. **Compliance Schedule**: (9 VAC 25-31-250) The permit includes a new limit for bacteria in terms of E. coli. Disinfection studies performed across the state have demonstrated that TRC is effective in limiting bacteria levels in domestic sewage discharges. Because these studies have previously been performed no compliance schedule is provided for this new limit. No other new limits in the permit requiring a schedule to achieve compliance.

20. **Special Conditions:** A brief rationale for each special condition contained in the permit is given below.

    a. Additional TRC Limitations and Monitoring Requirements (Part I.B.1) - Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.

    b. 95% Capacity Reopener (Part I.B.2.) - Rationale: Required by 9 VAC 25-31-200 B2 of the VPDES Permit Regulations for POTWs and PVOTWs.

    c. CTC, CTO Requirement (Part I.B.3.) - Rationale: Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790. This condition is used to notify the owner of the need for a CTC & CTO where a treatment works is being replaced or part of the system modified.

    d. O&M Manual Requirement (Part I.B.4.) - Rationale: Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190 E. A review of the current document should be performed to assess how well it reflects current practices. At a minimum a letter shall be submitted to the Regional office indicating that the current manual is up to date and that the only change is the incorporation of the new VPDES permit. Should any changes be made at the facility to operations and/or maintenance practices during the term of the permit the approved manual must be updated. The permittee is responsible for operating the facility in accordance with the O&M Manual.

    e. Reliability Class (Part I.B.5.) - Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities. The Reliability Class has been designated as Class III in agreement with the VDH recommendation for the facility.

    f. Closure Plan (Part I.B.6) - Rationale: In accordance with the Sewage Collection and Treatment Regulations 9 VAC 25-7900-120.E.3, a closure plan is required where a treatment works is being replaced, part of the system modified or is expected to close in accordance with regulatory requirements.

    g. Sludge Reopener (Part I.B.7.) - Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-220 C for all permits issued to treatment works treating domestic sewage.

    h. Total Maximum Daily Load (TMDL) Reopener (Part I.B.8.) - Rationale: Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) to be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

    i. Compliance Reporting (Part I.B.9) - Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J.4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. This condition also establishes protocols for calculation of reported values.

    j. Sludge Use and Disposal (Part I.B.10.) - Rationale: VPDES Permit Regulations section 9 VAC 25-31-100 P: 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

k. Conditions Applicable to All VPDES Permits (Part II) - Rationale: VPDES Permit Regulations, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. **Changes to the Permit**: changes in the effluent limitations from the 2005 permit - during permit processing or during public notice procedures.

    E. coli monitoring: Numerical effluent limits and monitoring of bacteria has been added in accordance with the VPDES Permit Manual following the February 2010 update to the Water Quality Standards 9 VAC 25-260-170 for bacteria as a weekly grab for the calculation of a monthly geometric mean less than 126 CFU/100 ml..

    Deletions or Modifications to special conditions from the 2005 permit The Special Conditions have been renumbered and updated in wording to reflect the current VPDES Permit Manual. The only new condition added is for a Closure Plan should the facility cease discharge (20.f. above).

22. **Variances/Alternate Limits or Conditions**: The permittee requested a waiver from application testing in submitting the application for reissuance of this permit. The request was for waiving fecal coliform analysis required by EPA Form 2A, item A.12. The bacterial standard in Virginia is E. coli and fecal coliform analysis is not useful. Therefore a waiver of this application item was granted.

    No variances or alternatives to required permit conditions/limitations are within the permit. No variances from technology guidelines or water quality standards or from VPDES permit manual guidance are known to be used in the development of this permit.

23. **Regulation of Users**: (9 VAC 25-31-280 B 9) There are no industrial users contributing to the treatment works influent.

24. **Public Notice Information required by 9 VAC 25-31-280 B**:

    All pertinent information is on file and may be inspected, and copied by contacting Susan K. Edwards at:

    Virginia DEQ, Blue Ridge Regional Office, 3019 Peters Creek Road, Roanoke, VA 24019
    Telephone no. (540)562-6700 or skedwards@deq.virginia.gov

    Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the DEQ Blue Ridge Regional Office by appointment.

25. **Additional Comments**:

    Previous Board Action - none

    Staff Comments - The discharge is not controversial. The BRRO-Roanoke Water Permit Support (Planning) Group notes that the discharge is in conformance with the existing planning documents for the area.

    Public Comments - *No comments were received during the Public Notice*.

Review of Reduced Monitoring Frequency - Guidance Memos 00-2011 and 98-2005 allows for reduced monitoring at facilities with excellent compliance histories. To qualify for consideration of reduced monitoring requirements, the facility should not have been issued any Warning Letters, NOVs, or NULEs, or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years. The facility has received a pair of Warning Letters both in 2008 and already in 2010. These four warning letters were all regarding compliance with the monthly ammonia limit. As such the facility is not eligible for reduced monitoring frequency.

26. **303(d) List**: This facility discharges directly to an unnamed tributary to Shoulder Run. As noted in section 13 of this Fact Sheet, the Staunton River High School STP falls into the Roanoke River basin/Goose Creek watershed (VAW-L21R). The stream segment receiving the effluent is listed as impaired for bacteria on the 2008 303(d) list. The bacteria TMDL for the Roanoke (Staunton) River Watershed is complete with U.S. EPA approval on June 6, 2006 and SWCB approval on June 27, 2007. The TMDL includes the Goose Creek Watershed. The permit is in compliance with the bacteria wasteload allocation provided in the TMDL. This permit has limits of 126 CFU (colony forming units)/100 ml as a calculated monthly geometric mean for E. coli (the freshwater bacterial water quality indicator) that require compliance with the standard prior to discharge. Given these limits this facility can neither cause nor contribute to the observed violation of the standards. The permit contains a re-opener condition that may allow these limits to be modified, in compliance with section 303(d)(4) of the Act once a TMDL is approved.

VPDES Permit VA0063738
Staunton River High School STP
Reissuance August 2010

ATTACHMENT A

1. Flow Frequency Memo of January 24, 2000

2. Schematic diagram of treatment plant from application package.

3. Portion of Goodview USGS quadrangle

4. Fact Sheet for 2008 impaired portion of Goose Creek as a Category 5 (Impaired Waters Fact Sheet), watershed description for the VAW-L21R-01-BAC watershed

5. Cover from Bacteria TMDL for Cub, Turnip, Buffalo (UT) Creeks, and Staunton River Watersheds. Excerpt from TMDL indicating the E. coli wasteload allocation for permitted facility VA0063738.

6. Site visit report of May 25, 2010

RBS
Dmmc

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Office of Water Quality Assessments
629 East Main Street P.O. Box 10009 Richmond, Virginia 23219

37° 14' 40"
79° 37' 35"

RECEIVED
JAN 28 2000
DEQ-WCRO

SUBJECT: Flow Frequency Determination
Staunton River High School – #VA006373888544

TO: Karen Stevens, WCRO

FROM: Paul E. Herman, P.E., WQAP

DATE: January 24, 2000

COPIES: Ron Gregory, Charles Martin, File

This memo supersedes my February 23, 1995, memo to you concerning the subject VPDES permit.

The Staunton River High School discharges to a tributary of the Shoulder Run near Moneta, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

At the discharge point, the receiving stream is shown to be intermittent on the USGS Goodview Quadrangle topographic map. The flow frequencies for intermittent streams are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and harmonic mean. The drainage area above the outfall is 0.105 mi^2. For modeling purposes, flow frequencies have been determined for the first perennial reach downstream of the discharge point using the VDEQ continuous record gauge on the Goose Creek near Huddleston, VA (#02059500) that has operated since 1931. The gage is located near the Haden Bridge on Route 732, in Bedford County, VA. The flow frequencies for the gauge and the perennial point are presented below. The values at the perennial point were determined by drainage area proportions and do not address any withdrawals, discharges or springs that may lie upstream.

Goose Creek near Huddleston, VA (#02059500):

Drainage Area = 188 mi^2

1Q10 = 20.4 cfs	High Flow 1Q10 = 47.2 cfs
7Q10 = 23.5 cfs	High Flow 7Q10 = 56.1 cfs
30Q5 = 37.0 cfs	HM = 93 cfs

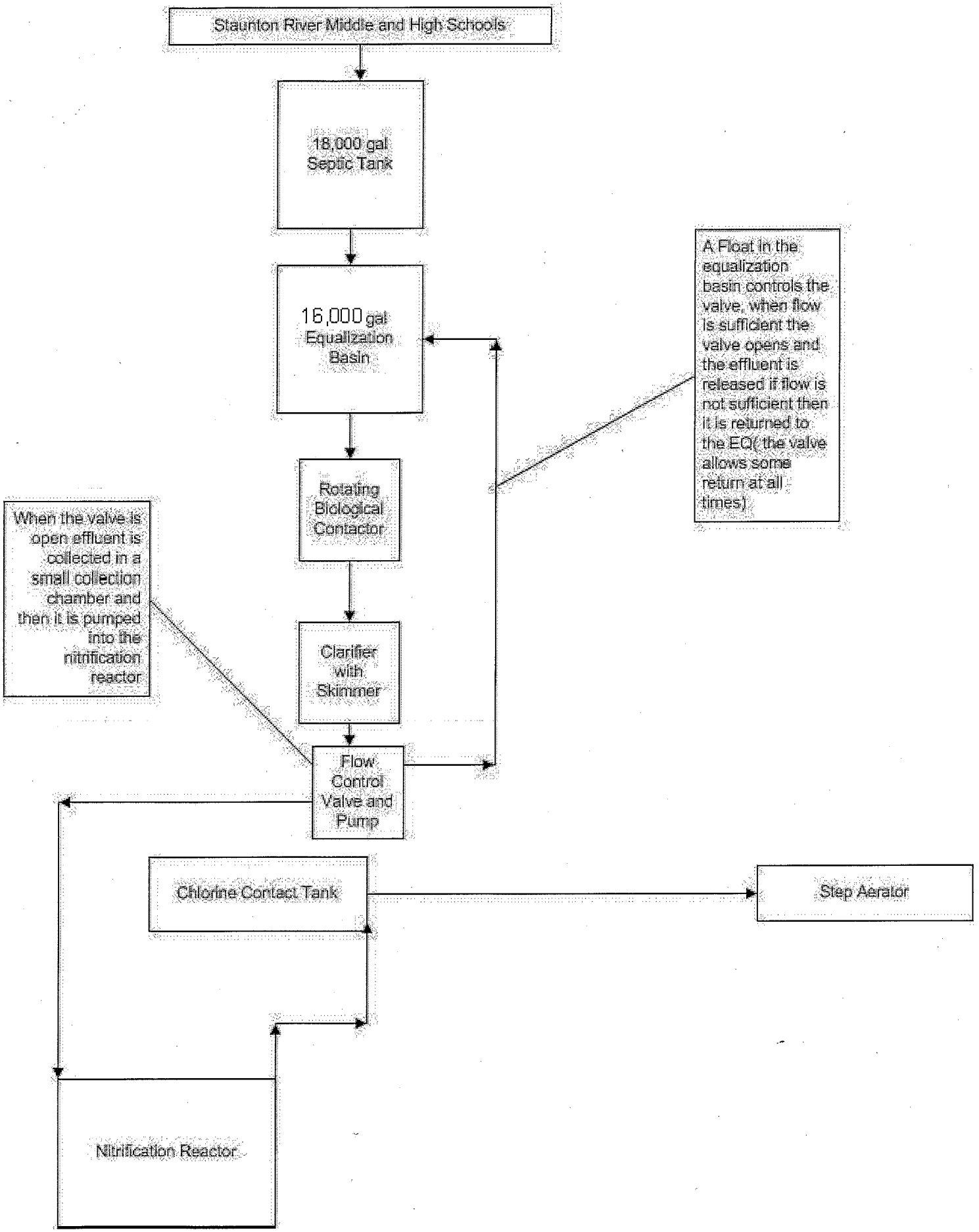
Shoulder Run at perennial point:

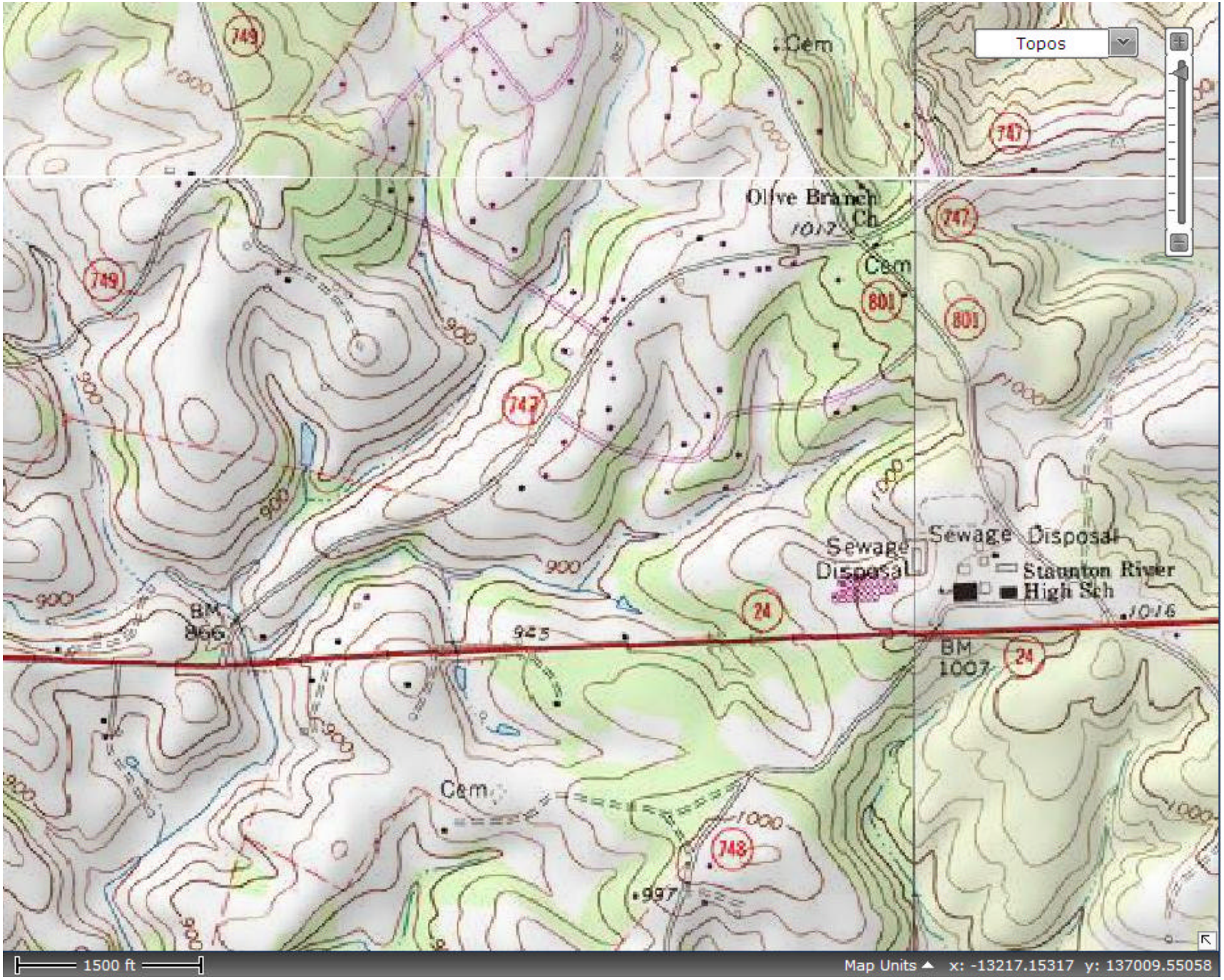
Drainage Area = 0.379 mi^2

1Q10 = 0.041 cfs =0.02625m6D	High Flow 1Q10 = 0.095 cfs = .0614
7Q10 = 0.047 cfs = .0304	High Flow 7Q10 = 0.113 cfs = .073
30Q5 = 0.075 cfs = .048	HM = 0.187 cfs = .187

The high flow months are January through May. If you have any questions concerning this analysis, please let me know.

Flow Diagram for Staunton River WWTP





Portion of Hardy & Goodview USGS topographic quadrangle maps (small portion of Stewartsville & Irving to North)

*Appendix A - List of Impaired (Category 5) Waters in 2008**

Roanoke and Yadkin River Basins

Cause Group Code **L21R-01-BAC** **Goose Creek**

Location: Goose Creek from the mouth of Rocky Branch downstream to the confluence of Stony Fork Creek.

City / County: Bedford Co.

Use(s): Recreation

Cause(s) / VA Category: Escherichia coli / 5A

The 1999 Federal Consent Decree includes 4AGSE022.55 as an Attachment B station for fecal coliform bacteria. The station was not 2002 303(d) listed as the 2002 exceedence rate is 8 percent where two of 23 analyses exceed the former 1000 cfu/100 ml instantaneous criterion. The 2004 fecal coliform (FC) bacteria assessment results in 303(d) Listing finding nonsupport based on the 400 cfu/100 ml instantaneous criterion in 2004. Escherichia coli (E.coli) replaces the 2004 7.26 mile fecal coliform bacteria 303(d) Listing as the indicator as per Water Quality Standards [9 VAC 25-260-170. Bacteria; other waters].

4AGSE025.64- E.coli exceed the 235 cfu/100 ml criterion in three of nine samples ranging from 250 to 700 cfu/100 ml.

4AGSE022.55- There are no additional data beyond the 2004 IR. 2004 Integrated Report (IR) records FC exceeds the 400 cfu/100 ml instantaneous criterion in two of 18 samples. The exceeding values are 800 and 3100 cfu/100 ml. 2008 IR finds one of three FC samples exceeding the instantaneous criterion.

Goose Creek **Recreation**	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Escherichia coli - Total Impaired Size by Water Type:			**7.26**

Sources:

Livestock (Grazing or Feeding Operations)	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems)	Unspecified Domestic Waste	Wildlife Other than Waterfowl

Bacteria TMDLs for the Cub Creek, Turnip Creek, Buffalo Creek, Buffalo Creek (UT), and Staunton River Watersheds, Virginia

Submitted by

Virginia Department of Environmental Quality

Prepared by

and

THE Louis Berger Group, INC.
2300 N Street, NW
Washington, DC 20037

April 2006

5.9 Staunton River TMDL

5.9.1 Staunton River Waste Load Allocation

There are 29 facilities in the Staunton River watershed permitted to discharge bacteria (see Chapter 4). For this TMDL, the wasteload allocation for permitted facilities is to maintain discharge at the design flow limits and bacteria concentrations at their permitted levels of 126 cfu/100mL. **Table 5-15** shows the loading from the permitted point source dischargers in the watershed.

Table 5-15: Staunton River Waste load Allocation for *E. coli*

Point Source	Existing Load (cfu/day)	Allocated Load (cfu/day)	Allocated Load (cfu/year)	Percent Reduction
VA0020451	1.72E+10	1.72E+10	6.28E+12	0%
VA0087106	6.99E+09	6.99E+09	2.55E+12	0%
VA0022241	3.72E+08	3.72E+08	1.36E+11	0%
VA0001678	1.56E+10	1.56E+10	5.69E+12	0%
VA0073733	1.67E+08	1.67E+08	6.10E+10	0%
VA0001538	6.32E+09	6.32E+09	2.31E+12	0%
VA0083402	4.16E+08	4.16E+08	1.52E+11	0%
VA0083399	9.16E+08	9.16E+08	3.34E+11	0%
VA0084433	3.82E+08	3.82E+08	1.39E+11	0%
VA0022748	3.43E+07	3.43E+07	1.25E+10	0%
VA0024058	1.19E+09	1.19E+09	4.34E+11	0%
VA0083097	8.28E+09	8.28E+09	3.02E+12	0%
VA0050822	3.85E+08	3.85E+08	1.41E+11	0%
VA0087238	9.54E+07	9.54E+07	3.48E+10	0%
VA0063738	1.22E+08	1.22E+08	4.45E+10	0%
VA0020869	1.67E+07	1.67E+07	6.10E+09	0%
VA0089052	4.77E+02	4.77E+02	1.74E+05	0%
VA0054577	4.77E+02	4.77E+02	1.74E+05	0%
VA0060909	7.15E+07	7.15E+07	2.61E+10	0%
VA0051721	8.11E+07	8.11E+07	2.96E+10	0%
VA0023515	1.00E+08	1.00E+08	3.65E+10	0%
VA0001490	3.10E+08	3.10E+08	1.13E+11	0%
VA0026051	2.71E+09	2.71E+09	9.89E+11	0%
VA0051446	2.23E+09	2.23E+09	8.14E+11	0%
VA0074870	2.29E+07	2.29E+07	8.36E+09	0%
VAG404017	4.77E+06	4.77E+06	1.74E+09	0%
VAG404081	2.15E+06	2.15E+06	7.85E+08	0%
VAG404106	2.15E+06	2.15E+06	7.85E+08	0%
VAG404143	2.86E+06	2.86E+06	1.04E+09	0%
Total	**6.40E+10**	**6.40E+10**	**2.34E+13**	**0%**

M E M O R A N D U M
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
BLUE RIDGE REGIONAL OFFICE
WATER DIVISION

3019 Peters Creek Road **Roanoke, Virginia 24019-2738**

SUBJECT: Site visit for VPDES Permit Reissuance - VA0063738
Staunton River High School STP, Bedford County

To: VPDES Permit file VA0063738

From: Susan K. Edwards, Environmental Engineer Sr.

Date: May 25, 2010

On Wednesday, May 25, 2010, the writer performed a site visit at the Staunton River High School STP. Present during the visit was Ms. Laura Key, Chad Williams and Charlie Hensley who work for the Bedford County PSA who operates the facility for Bedford County Schools.

The treatment plant consists of an 18,000 gallon septic tank, 16,000 gallon split equalization basin, rotating biological contactor, clarifier with skimmer, nitrification reactor, soda ash for pH adjustment, chlorine disinfection, baffled chlorine contact tank, dechlorination and cascade aeration steps. The design capacity is 25,600 gallons per day. It treats municipal sewage from the Staunton River Middle and High School. Currently there are approximately 1250 students, staff and faculty served.

The treatment plant is located in the northwestern rear of the middle school property behind the ball fields and the school bus parking lot. The plant is within a locked chain link fence. The plant appears in good operating condition. There was a steady discharge from the plant at the time of the visit as students and staff were in school during the time of the visit. The plant's discharge is intermittent, only when students & staff are on campus. There is no flow on weekends, holidays or seasonal breaks.

The rotating biological contactor, clarifier, disinfection and dechlorination operations are within a brick building. The nitrification reactor is located above ground outside the building, yet inside the fenced yard. The plant uses liquid chlorination and dechlorination (sodium metabisulfite). Soda ash is used for pH adjustment. All chemicals used are stored inside the office area of the treatment building to minimize deterioration of the bags they experience if stored in the treatment room. Flow at the plant is estimated based on the number of students at the two schools served by the treatment plant. Septage from the septic tank and any solids build-up in the clarifier are pumped and hauled by contract hauling company to the Western Virginia Water Pollution Control Plant (Roanoke Regional WPCP).

After disinfection and dechlorination the effluent flows to the cascade aeration steps down to the outlet structure at the discharge to the unnamed tributary to Shoulder Run. The erosion to the bank around the cascade aeration steps appear to have been addressed. Cracked in the step structure noted previously have been repaired causing the effluent to flow across the outfall structure as intended. The creek bottom where the effluent spills across the outlet structure could have more rip-rap added but things appears better than the last reissuance. The receiving stream had very little flow during the visit. The receiving stream has large rocks and is rather sharply meandering. There does not appear to be any buildup of slime, algae or other solids in the creek. The stream includes pools of water along the reach.

Operational logs located in the operator's office are used to record daily measurements for the plant. There wasn't a copy of the O&M Manual located in the office but at the Bedford County PSA Office where operations are coordinated for this and most other waste water treatment plants serving Bedford County Schools.

Overall, the plant appears to be in good condition and operating well.

VPDES Permit VA0063738
Staunton River High School STP
Reissuance August 2010

ATTACHMENT B

1. 3-year summary of effluent monitoring data - flow, pH, BOD_5, TSS, DO and Ammonia as N

2. Wasteload allocation spreadsheet from 2005 reissuance MSTRANTI(draft k) including ammonia worksheet.

3. STATS.exe software output for analysis of chlorine and ammonia from 2005 reissuance.

DMR Data Summary **Permit VA0063738**

Bedford County Schools - Staunton River HS

	Flow (MGD)		pH (SU)		BOD5				TSS				DO	Ammonia	
Due Date	Qty Avg	Qty Max.	Conc. Min.	Conc. Max	Qty Avg	Qty Max.	Conc. Avg	Conc. Max	Qty Avg	Qty Max.	Conc. Avg	Conc. Max	Conc. Min.	Conc. Avg	Conc. Max
10-Jul-2007	0.0083	0.0083	7.0	8.5	<QL	<QL	<QL	<QL	0.22	0.22	7	7	7.4	0.12	0.12
10-Aug-2007	0.0083	0.0083	8.1	8.8	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	7.3	0.18	0.18
10-Sep-2007	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10-Oct-2007	0.0083	0.0083	6.8	8.0	0.30	0.30	19	19	0.19	0.19	6	6	6.9	0.11	0.11
10-Nov-2007	0.0083	0.0083	6.6	8.4	<QL	<QL	<QL	<QL	0.15	0.15	5	5	7.9	<QL	<QL
10-Dec-2007	0.0083	0.0083	7.0	7.9	0.471	0.471	15	15	0.28	0.28	9	9	7.3	1.71	3.58
10-Jan-2008	0.0083	0.0083	7.3	8.0	<QL	<QL	<QL	<QL	0.02	0.02	5	5	8.0	<QL	<QL
10-Feb-2008	0.0083	0.0083	6.8	8.6	<QL	<QL	<QL	<QL	0.13	0.13	4	4	9.4	4.7	18.6
10-Mar-2008	0.0083	0.0083	6.0	8.1	<QL	<QL	<QL	<QL	0.13	0.13	4	4	7.4	<QL	<QL
10-Apr-2008	0.0083	0.0083	6.0	7.7	<QL	<QL	<QL	<QL	0.22	0.22	7	7	8.7	1.08	1.08
10-May-2008	0.0083	0.0083	8.0	7.6	<QL	<QL	<QL	<QL	0.13	0.13	4	4	8.1	0.22	0.22
10-Jun-2008	0.0083	0.0083	6.7	8.1	<QL	<QL	<QL	<QL	0.16	0.16	5	5	7.8	0.3	0.3
10-Jul-2008	0.0083	0.0083	7.1	7.9	<QL	<QL	<QL	<QL	0.22	0.22	7	7	8.0	<QL	<QL
10-Aug-2008	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10-Sep-2008	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10-Oct-2008	0.0083	0.0083	6.9	8.3	<QL	<QL	<QL	<QL	0.09	0.09	3	3	8.1	<QL	<QL
10-Nov-2008	0.0083	0.0083	6.7	7.9	<QL	<QL	<QL	<QL	0.19	0.19	6	6	7.9	<QL	<QL
10-Dec-2008	0.0083	0.0083	6	7.9	<QL	<QL	<QL	<QL	0.13	0.13	4	4	7.6	<QL	<QL
10-Jan-2009	0.0083	0.0083	6.6	7.9	<QL	<QL	<QL	<QL	0.28	0.28	9	9	7.2	<QL	<QL
10-Feb-2009	0.0083	0.0083	6.7	8.1	0.25	0.25	8	8	0.16	0.16	5	5	9.8	<QL	<QL
10-Mar-2009	0.0083	0.0083	6.6	7.8	0.16	0.16	5	5	0.25	0.25	8	8	8.8	<QL	<QL
10-Apr-2009	0.0083	0.0083	6.1	8	0.28	0.28	9	9	0.38	0.38	12	12	9.2	<QL	<QL
10-May-2009	0.0083	0.0083	6.0	9.0	0.16	0.16	5	5	0.22	0.22	7	7	8.0	0.63	0.63
10-Jun-2009	0.0083	0.0083	6.5	7.9	0.50	0.50	16	16	0.19	0.19	6	6	7.5	0.33	0.33
10-Jul-2009	0.0083	0.0083	6.3	7.3	<QL	<QL	<QL	<QL	0.09	0.09	3	3	6.9	1.0	1.0
10-Aug-2009	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10-Sep-2009	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10-Oct-2009	0.0083	0.0083	6.7	8.1	<QL	<QL	<QL	<QL	0.28	0.28	9	9	7.5	<QL	<QL
10-Nov-2009	0.0083	0.0083	7	7.7	0.22	0.22	7	7	0.28	0.28	9	9	8.2	<QL	<QL
10-Dec-2009	0.0083	0.0083	7.1	8.9	0.44	0.44	14	14	0.53	0.54	16.5	16.5	8.7	16.5	16.5
10-Jan-2010	0.0083	0.0083	7.7	8.4	0.25	0.25	8	8	0.13	0.13	4	4	9.6	10.2	10.2
10-Feb-2010	0.0083	0.0083	7	8.3	0.22	0.22	7	7	0.19	0.19	6	6	10.1	0.2	0.2
10-Mar-2010	0.0083	0.0083	6.6	7.9	<QL	<QL	<QL	<QL	0.16	0.16	5	5	9.5	<QL	<QL
10-Apr-2010	0.0083	0.0083	6.8	7.6	<QL	<QL	<QL	<QL	0.13	0.13	4	4	10.1	<QL	<QL
10-May-2010	0.0083	0.0083	6	7.9	<QL	<QL	<QL	<QL	0.16	0.16	5	5	7.8	<QL	<QL
10-Jun-2010	0.0083	0.0083	6.3	7.7	<QL	<QL	<QL	<QL	0.38	0.38	12	12	8.1	0.7	0.7
Permit limit	**NL**	**NL**	**6.0**	**9.0**	**1.8**	**2.7**	**19**	**28**	**2.9**	**4.3**	**30**	**45**	**6.0**	**2.0**	**2.0**

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Staunton River HS STP Permit No.: VA0063738

Receiving Stream: UT to Shoulder Run Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		
Mean Hardness (as CaCO3) =	25	mg/L
90% Temperature (Annual) =	21	deg C
90% Temperature (Wet season) =	19	deg C
90% Maximum pH =	7.2	SU
10% Maximum pH =	7.5	SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	y	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	n	

Stream Flows		
1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season)	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD
Annual Average =	0	MGD

Mixing Information		
Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information		
Mean Hardness (as CaCO3) =	25	mg/L
90% Temp (Annual) =	21	deg C
90% Temp (Wet season) =	21	deg C
90% Maximum pH =	7.2	SU
10% Maximum pH =	7.2	SU
Discharge Flow =	0.0256	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	1.2E+03	2.7E+03	--	--	1.2E+03	2.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.2E+03**	**2.7E+03**
Acrolein	0	--	--	3.2E+02	7.8E+02	--	--	3.2E+02	7.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**3.2E+02**	**7.8E+02**
Acrylonitrile [C]	0	--	--	5.9E-01	6.6E+00	--	--	5.9E-01	6.6E+00	--	--	--	--	--	--	--	--	**--**	**--**	**5.9E-01**	**6.6E+00**
Aldrin [C]	0	3.0E+00	--	1.3E-03	1.4E-03	3.0E+00	--	1.3E-03	1.4E-03	--	--	--	--	--	--	--	--	**3.0E+00**	**--**	**1.3E-03**	**1.4E-03**
Ammonia-N (mg/l) (Yearly)	0	2.95E+01	3.55E+00	--	--	3.0E+01	3.5E+00	--	--	--	--	--	--	--	--	--	--	**3.0E+01**	**3.5E+00**	**--**	**--**
Ammonia-N (mg/l) (High Flow)	0	2.95E+01	3.55E+00	--	--	3.0E+01	3.5E+00	--	--	--	--	--	--	--	--	--	--	**3.0E+01**	**3.5E+00**	**--**	**--**
Anthracene	0	--	--	9.6E+03	1.1E+05	--	--	9.6E+03	1.1E+05	--	--	--	--	--	--	--	--	**--**	**--**	**9.6E+03**	**1.1E+05**
Antimony	0	--	--	1.4E+01	4.3E+03	--	--	1.4E+01	4.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.4E+01**	**4.3E+03**
Arsenic	0	3.4E+02	1.5E+02	1.0E+01	--	3.4E+02	1.5E+02	1.0E+01	--	--	--	--	--	--	--	--	--	**3.4E+02**	**1.5E+02**	**1.0E+01**	**--**
Barium	0	--	--	2.0E+03	--	--	--	2.0E+03	--	--	--	--	--	--	--	--	--	**--**	**--**	**2.0E+03**	**--**
Benzene [C]	0	--	--	1.2E+01	7.1E+02	--	--	1.2E+01	7.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**1.2E+01**	**7.1E+02**
Benzidine [C]	0	--	--	1.2E-03	5.4E-03	--	--	1.2E-03	5.4E-03	--	--	--	--	--	--	--	--	**--**	**--**	**1.2E-03**	**5.4E-03**
Benzo (a) anthracene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.4E-02**	**4.9E-01**
Benzo (b) fluoranthene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.4E-02**	**4.9E-01**
Benzo (k) fluoranthene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.4E-02**	**4.9E-01**
Benzo (a) pyrene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.4E-02**	**4.9E-01**
Bis2-Chloroethyl Ether	0	--	--	3.1E-01	1.4E+01	--	--	3.1E-01	1.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**3.1E-01**	**1.4E+01**
Bis2-Chloroisopropyl Ether	0	--	--	1.4E+03	1.7E+05	--	--	1.4E+03	1.7E+05	--	--	--	--	--	--	--	--	**--**	**--**	**1.4E+03**	**1.7E+05**
Bromoform [C]	0	--	--	4.4E+01	3.6E+03	--	--	4.4E+01	3.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**4.4E+01**	**3.6E+03**
Butylbenzylphthalate	0	--	--	3.0E+03	5.2E+03	--	--	3.0E+03	5.2E+03	--	--	--	--	--	--	--	--	**--**	**--**	**3.0E+03**	**5.2E+03**
Cadmium	0	8.2E-01	3.8E-01	5.0E+00	--	8.2E-01	3.8E-01	5.0E+00	--	--	--	--	--	--	--	--	--	**8.2E-01**	**3.8E-01**	**5.0E+00**	**--**
Carbon Tetrachloride [C]	0	--	--	2.5E+00	4.4E+01	--	--	2.5E+00	4.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**2.5E+00**	**4.4E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	2.1E-02	2.2E-02	2.4E+00	4.3E-03	2.1E-02	2.2E-02	--	--	--	--	--	--	--	--	**2.4E+00**	**4.3E-03**	**2.1E-02**	**2.2E-02**
Chloride	0	8.6E+05	2.3E+05	2.5E+05	--	8.6E+05	2.3E+05	2.5E+05	--	--	--	--	--	--	--	--	--	**8.6E+05**	**2.3E+05**	**2.5E+05**	**--**
TRC	0	1.9E+01	1.1E+01	--	--	1.9E+01	1.1E+01	--	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	**--**	**--**
Chlorobenzene	0	--	--	6.8E+02	2.1E+04	--	--	6.8E+02	2.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**6.8E+02**	**2.1E+04**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	4.1E+00	3.4E+02	--	--	4.1E+00	3.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**4.1E+00**	**3.4E+02**
Chloroform [C]	0	--	--	3.5E+02	2.9E+04	--	--	3.5E+02	2.9E+04	--	--	--	--	--	--	--	--	**--**	**--**	**3.5E+02**	**2.9E+04**
2-Chloronaphthalene	0	--	--	1.7E+03	4.3E+03	--	--	1.7E+03	4.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.7E+03**	**4.3E+03**
2-Chlorophenol	0	--	--	1.2E+02	4.0E+02	--	--	1.2E+02	4.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**1.2E+02**	**4.0E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	--	--	8.3E-02	4.1E-02	--	--	--	--	--	--	--	--	--	--	**8.3E-02**	**4.1E-02**	**--**	**--**
Chromium III	0	1.8E+02	2.4E+01	--	--	1.8E+02	2.4E+01	--	--	--	--	--	--	--	--	--	--	**1.8E+02**	**2.4E+01**	**--**	**--**
Chromium VI	0	1.6E+01	1.1E+01	--	--	1.6E+01	1.1E+01	--	--	--	--	--	--	--	--	--	--	**1.6E+01**	**1.1E+01**	**--**	**--**
Chromium, Total	0	--	--	1.0E+02	--	--	--	1.0E+02	--	--	--	--	--	--	--	--	--	**--**	**--**	**1.0E+02**	**--**
Chrysene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.4E-02**	**4.9E-01**
Copper	0	3.6E+00	2.7E+00	1.3E+03	--	3.6E+00	2.7E+00	1.3E+03	--	--	--	--	--	--	--	--	--	**3.6E+00**	**2.7E+00**	**1.3E+03**	**--**
Cyanide	0	2.2E+01	5.2E+00	7.0E+02	2.2E+05	2.2E+01	5.2E+00	7.0E+02	2.2E+05	--	--	--	--	--	--	--	--	**2.2E+01**	**5.2E+00**	**7.0E+02**	**2.2E+05**
DDD [C]	0	--	--	8.3E-03	8.4E-03	--	--	8.3E-03	8.4E-03	--	--	--	--	--	--	--	--	**--**	**--**	**8.3E-03**	**8.4E-03**
DDE [C]	0	--	--	5.9E-03	5.9E-03	--	--	5.9E-03	5.9E-03	--	--	--	--	--	--	--	--	**--**	**--**	**5.9E-03**	**5.9E-03**
DDT [C]	0	1.1E+00	1.0E-03	5.9E-03	5.9E-03	1.1E+00	1.0E-03	5.9E-03	5.9E-03	--	--	--	--	--	--	--	--	**1.1E+00**	**1.0E-03**	**5.9E-03**	**5.9E-03**
Demeton	0	--	1.0E-01	--	--	--	1.0E-01	--	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**--**	**--**
Dibenz(a,h)anthracene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.4E-02**	**4.9E-01**
Dibutyl phthalate	0	--	--	2.7E+03	1.2E+04	--	--	2.7E+03	1.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**2.7E+03**	**1.2E+04**
Dichloromethane (Methylene Chloride) [C]	0	--	--	4.7E+01	1.6E+04	--	--	4.7E+01	1.6E+04	--	--	--	--	--	--	--	--	**--**	**--**	**4.7E+01**	**1.6E+04**
1,2-Dichlorobenzene	0	--	--	2.7E+03	1.7E+04	--	--	2.7E+03	1.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**2.7E+03**	**1.7E+04**
1,3-Dichlorobenzene	0	--	--	4.0E+02	2.6E+03	--	--	4.0E+02	2.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**4.0E+02**	**2.6E+03**
1,4-Dichlorobenzene	0	--	--	4.0E+02	2.6E+03	--	--	4.0E+02	2.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**4.0E+02**	**2.6E+03**
3,3-Dichlorobenzidine[C]	0	--	--	4.0E-01	7.7E-01	--	--	4.0E-01	7.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.0E-01**	**7.7E-01**
Dichlorobromomethane [C]	0	--	--	5.6E+00	4.6E+02	--	--	5.6E+00	4.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**5.6E+00**	**4.6E+02**
1,2-Dichloroethane [C]	0	--	--	3.8E+00	9.9E+02	--	--	3.8E+00	9.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**3.8E+00**	**9.9E+02**
1,1-Dichloroethylene	0	--	--	3.1E+02	1.7E+04	--	--	3.1E+02	1.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**3.1E+02**	**1.7E+04**
1,2-trans-dichloroethylene	0	--	--	7.0E+02	1.4E+05	--	--	7.0E+02	1.4E+05	--	--	--	--	--	--	--	--	**--**	**--**	**7.0E+02**	**1.4E+05**
2,4-Dichlorophenol	0	--	--	9.3E+01	7.9E+02	--	--	9.3E+01	7.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**9.3E+01**	**7.9E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	1.0E+02	--	--	--	1.0E+02	--	--	--	--	--	--	--	--	--	**--**	**--**	**1.0E+02**	**--**
1,2-Dichloropropane[C]	0	--	--	5.2E+00	3.9E+02	--	--	5.2E+00	3.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**5.2E+00**	**3.9E+02**
1,3-Dichloropropene	0	--	--	1.0E+01	1.7E+03	--	--	1.0E+01	1.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.0E+01**	**1.7E+03**
Dieldrin [C]	0	2.4E-01	5.6E-02	1.4E-03	1.4E-03	2.4E-01	5.6E-02	1.4E-03	1.4E-03	--	--	--	--	--	--	--	--	**2.4E-01**	**5.6E-02**	**1.4E-03**	**1.4E-03**
Diethyl Phthalate	0	--	--	2.3E+04	1.2E+05	--	--	2.3E+04	1.2E+05	--	--	--	--	--	--	--	--	**--**	**--**	**2.3E+04**	**1.2E+05**
Di-2-Ethylhexyl Phthalate [C]	0	--	--	1.8E+01	5.9E+01	--	--	1.8E+01	5.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.8E+01**	**5.9E+01**
2,4-Dimethylphenol	0	--	--	5.4E+02	2.3E+03	--	--	5.4E+02	2.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**5.4E+02**	**2.3E+03**
Dimethyl Phthalate	0	--	--	3.1E+05	2.9E+06	--	--	3.1E+05	2.9E+06	--	--	--	--	--	--	--	--	**--**	**--**	**3.1E+05**	**2.9E+06**
Di-n-Butyl Phthalate	0	--	--	2.7E+03	1.2E+04	--	--	2.7E+03	1.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**2.7E+03**	**1.2E+04**
2,4 Dinitrophenol	0	--	--	7.0E+01	1.4E+04	--	--	7.0E+01	1.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**7.0E+01**	**1.4E+04**
2-Methyl-4,6-Dinitrophenol	0	--	--	1.3E+01	7.65E+02	--	--	1.3E+01	7.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**1.3E+01**	**7.7E+02**
2,4-Dinitrotoluene [C]	0	--	--	1.1E+00	9.1E+01	--	--	1.1E+00	9.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.1E+00**	**9.1E+01**
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	1.2E-06	1.2E-06	--	--	1.2E-06	1.2E-06	--	--	--	--	--	--	--	--	**--**	**--**	**1.2E-06**	**1.2E-06**
1,2-Diphenylhydrazine[C]	0	--	--	4.0E-01	5.4E+00	--	--	4.0E-01	5.4E+00	--	--	--	--	--	--	--	--	**--**	**--**	**4.0E-01**	**5.4E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	2.2E-01	5.6E-02	1.1E+02	2.4E+02	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**1.1E+02**	**2.4E+02**
Beta-Endosulfan	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	2.2E-01	5.6E-02	1.1E+02	2.4E+02	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**1.1E+02**	**2.4E+02**
Endosulfan Sulfate	0	--	--	1.1E+02	2.4E+02	--	--	1.1E+02	2.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**1.1E+02**	**2.4E+02**
Endrin	0	8.6E-02	3.6E-02	7.6E-01	8.1E-01	8.6E-02	3.6E-02	7.6E-01	8.1E-01	--	--	--	--	--	--	--	--	**8.6E-02**	**3.6E-02**	**7.6E-01**	**8.1E-01**
Endrin Aldehyde	0	--	--	7.6E-01	8.1E-01	--	--	7.6E-01	8.1E-01	--	--	--	--	--	--	--	--	**--**	**--**	**7.6E-01**	**8.1E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	3.1E+03	2.9E+04	--	--	3.1E+03	2.9E+04	--	--	--	--	--	--	--	--	**--**	**--**	**3.1E+03**	**2.9E+04**
Fluoranthene	0	--	--	3.0E+02	3.7E+02	--	--	3.0E+02	3.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**3.0E+02**	**3.7E+02**
Fluorene	0	--	--	1.3E+03	1.4E+04	--	--	1.3E+03	1.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**1.3E+03**	**1.4E+04**
Foaming Agents	0	--	--	5.0E+02	--	--	--	5.0E+02	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.0E+02**	**--**
Guthion	0	--	1.0E-02	--	--	--	1.0E-02	--	--	--	--	--	--	--	--	--	--	**--**	**1.0E-02**	**--**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	2.1E-03	2.1E-03	5.2E-01	3.8E-03	2.1E-03	2.1E-03	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**2.1E-03**	**2.1E-03**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	1.0E-03	1.1E-03	5.2E-01	3.8E-03	1.0E-03	1.1E-03	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**1.0E-03**	**1.1E-03**
Hexachlorobenzene[C]	0	--	--	7.5E-03	7.7E-03	--	--	7.5E-03	7.7E-03	--	--	--	--	--	--	--	--	**--**	**--**	**7.5E-03**	**7.7E-03**
Hexachlorobutadiene[C]	0	--	--	4.4E+00	5.0E+02	--	--	4.4E+00	5.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**4.4E+00**	**5.0E+02**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	3.9E-02	1.3E-01	--	--	3.9E-02	1.3E-01	--	--	--	--	--	--	--	--	**--**	**--**	**3.9E-02**	**1.3E-01**
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	1.4E-01	4.6E-01	--	--	1.4E-01	4.6E-01	--	--	--	--	--	--	--	--	**--**	**--**	**1.4E-01**	**4.6E-01**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	--	1.9E-01	6.3E-01	9.5E-01	--	1.9E-01	6.3E-01	--	--	--	--	--	--	--	--	**9.5E-01**	**--**	**1.9E-01**	**6.3E-01**
Hexachlorocyclopentadiene	0	--	--	2.4E+02	1.7E+04	--	--	2.4E+02	1.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**2.4E+02**	**1.7E+04**
Hexachloroethane[C]	0	--	--	1.9E+01	8.9E+01	--	--	1.9E+01	8.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.9E+01**	**8.9E+01**
Hydrogen Sulfide	0	--	2.0E+00	--	--	--	2.0E+00	--	--	--	--	--	--	--	--	--	--	**--**	**2.0E+00**	**--**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.4E-02**	**4.9E-01**
Iron	0	--	--	3.0E+02	--	--	--	3.0E+02	--	--	--	--	--	--	--	--	--	**--**	**--**	**3.0E+02**	**--**
Isophorone[C]	0	--	--	3.6E+02	2.6E+04	--	--	3.6E+02	2.6E+04	--	--	--	--	--	--	--	--	**--**	**--**	**3.6E+02**	**2.6E+04**
Kepone	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**--**	**--**
Lead	0	2.0E+01	2.3E+00	1.5E+01	--	2.0E+01	2.3E+00	1.5E+01	--	--	--	--	--	--	--	--	--	**2.0E+01**	**2.3E+00**	**1.5E+01**	**--**
Malathion	0	--	1.0E-01	--	--	--	1.0E-01	--	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**--**	**--**
Manganese	0	--	--	5.0E+01	--	--	--	5.0E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.0E+01**	**--**
Mercury	0	1.4E+00	7.7E-01	5.0E-02	5.1E-02	1.4E+00	7.7E-01	5.0E-02	5.1E-02	--	--	--	--	--	--	--	--	**1.4E+00**	**7.7E-01**	**5.0E-02**	**5.1E-02**
Methyl Bromide	0	--	--	4.8E+01	4.0E+03	--	--	4.8E+01	4.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**4.8E+01**	**4.0E+03**
Methoxychlor	0	--	3.0E-02	1.0E+02	--	--	3.0E-02	1.0E+02	--	--	--	--	--	--	--	--	--	**--**	**3.0E-02**	**1.0E+02**	**--**
Mirex	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**--**	**--**
Monochlorobenzene	0	--	--	6.8E+02	2.1E+04	--	--	6.8E+02	2.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**6.8E+02**	**2.1E+04**
Nickel	0	5.6E+01	6.3E+00	6.1E+02	4.6E+03	5.6E+01	6.3E+00	6.1E+02	4.6E+03	--	--	--	--	--	--	--	--	**5.6E+01**	**6.3E+00**	**6.1E+02**	**4.6E+03**
Nitrate (as N)	0	--	--	1.0E+04	--	--	--	1.0E+04	--	--	--	--	--	--	--	--	--	**--**	**--**	**1.0E+04**	**--**
Nitrobenzene	0	--	--	1.7E+01	1.9E+03	--	--	1.7E+01	1.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.7E+01**	**1.9E+03**
N-Nitrosodimethylamine[C]	0	--	--	6.9E-03	8.1E+01	--	--	6.9E-03	8.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**6.9E-03**	**8.1E+01**
N-Nitrosodiphenylamine[C]	0	--	--	5.0E+01	1.6E+02	--	--	5.0E+01	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**5.0E+01**	**1.6E+02**
N-Nitrosodi-n-propylamine[C]	0	--	--	5.0E-02	1.4E+01	--	--	5.0E-02	1.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**5.0E-02**	**1.4E+01**
Parathion	0	6.5E-02	1.3E-02	--	--	6.5E-02	1.3E-02	--	--	--	--	--	--	--	--	--	--	**6.5E-02**	**1.3E-02**	**--**	**--**
PCB-1016	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**--**	**--**
PCB-1221	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**--**	**--**
PCB-1232	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**--**	**--**
PCB-1242	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**--**	**--**
PCB-1248	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**--**	**--**
PCB-1254	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**--**	**--**
PCB-1260	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**--**	**--**
PCB Total[C]	0	--	--	1.7E-03	1.7E-03	--	--	1.7E-03	1.7E-03	--	--	--	--	--	--	--	--	**--**	**--**	**1.7E-03**	**1.7E-03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Pentachlorophenol [C]	0	1.1E+01	8.2E+00	2.8E+00	8.2E+01	1.1E+01	8.2E+00	2.8E+00	8.2E+01	--	--	--	--	--	--	--	--	**1.1E+01**	**8.2E+00**	**2.8E+00**	**8.2E+01**
Phenol	0	--	--	2.1E+04	4.6E+06	--	--	2.1E+04	4.6E+06	--	--	--	--	--	--	--	--	**--**	**--**	**2.1E+04**	**4.6E+06**
Pyrene	0	--	--	9.6E+02	1.1E+04	--	--	9.6E+02	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**9.6E+02**	**1.1E+04**
Radionuclides (pCi/l except Beta/Photon)	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**--**	**--**	**--**	**--**
Gross Alpha Activity	0	--	--	1.5E+01	1.5E+01	--	--	1.5E+01	1.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.5E+01**	**1.5E+01**
Beta and Photon Activity (mrem/yr)	0	--	--	4.0E+00	4.0E+00	--	--	4.0E+00	4.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**4.0E+00**	**4.0E+00**
Strontium-90	0	--	--	8.0E+00	8.0E+00	--	--	8.0E+00	8.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**8.0E+00**	**8.0E+00**
Tritium	0	--	--	2.0E+04	2.0E+04	--	--	2.0E+04	2.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**2.0E+04**	**2.0E+04**
Selenium	0	2.0E+01	5.0E+00	1.7E+02	1.1E+04	2.0E+01	5.0E+00	1.7E+02	1.1E+04	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**1.7E+02**	**1.1E+04**
Silver	0	3.2E-01	--	--	--	3.2E-01	--	--	--	--	--	--	--	--	--	--	--	**3.2E-01**	**--**	**--**	**--**
Sulfate	0	--	--	2.5E+05	--	--	--	2.5E+05	--	--	--	--	--	--	--	--	--	**--**	**--**	**2.5E+05**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	1.7E+00	1.1E+02	--	--	1.7E+00	1.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**1.7E+00**	**1.1E+02**
Tetrachloroethylene[C]	0	--	--	8.0E+00	8.9E+01	--	--	8.0E+00	8.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**8.0E+00**	**8.9E+01**
Thallium	0	--	--	1.7E+00	6.3E+00	--	--	1.7E+00	6.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**1.7E+00**	**6.3E+00**
Toluene	0	--	--	6.8E+03	2.0E+05	--	--	6.8E+03	2.0E+05	--	--	--	--	--	--	--	--	**--**	**--**	**6.8E+03**	**2.0E+05**
Total dissolved solids	0	--	--	5.0E+05	--	--	--	5.0E+05	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.0E+05**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	7.3E-03	7.5E-03	7.3E-01	2.0E-04	7.3E-03	7.5E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**7.3E-03**	**7.5E-03**
Tributyltin	0	4.6E-01	6.3E-02	--	--	4.6E-01	6.3E-02	--	--	--	--	--	--	--	--	--	--	**4.6E-01**	**6.3E-02**	**--**	**--**
1,2,4-Trichlorobenzene	0	--	--	2.6E+02	9.4E+02	--	--	2.6E+02	9.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**2.6E+02**	**9.4E+02**
1,1,2-Trichloroethane[C]	0	--	--	6.0E+00	4.2E+02	--	--	6.0E+00	4.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**6.0E+00**	**4.2E+02**
Trichloroethylene [C]	0	--	--	2.7E+01	8.1E+02	--	--	2.7E+01	8.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**2.7E+01**	**8.1E+02**
2,4,6-Trichlorophenol [C]	0	--	--	2.1E+01	6.5E+01	--	--	2.1E+01	6.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**2.1E+01**	**6.5E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	5.0E+01	--	--	--	5.0E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.0E+01**	**--**
Vinyl Chloride[C]	0	--	--	2.3E-01	6.1E+01	--	--	2.3E-01	6.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**2.3E-01**	**6.1E+01**
Zinc	0	3.6E+01	3.6E+01	9.1E+03	6.9E+04	3.6E+01	3.6E+01	9.1E+03	6.9E+04	--	--	--	--	--	--	--	--	**3.6E+01**	**3.6E+01**	**9.1E+03**	**6.9E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens,
   Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	1.4E+01
Arsenic	1.0E+01
Barium	2.0E+03
Cadmium	2.3E-01
Chromium III	1.4E+01
Chromium VI	6.4E+00
Copper	1.5E+00
Iron	3.0E+02
Lead	1.4E+00
Manganese	5.0E+01
Mercury	5.0E-02
Nickel	3.8E+00
Selenium	3.0E+00
Silver	1.3E-01
Zinc	1.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

6/29/2005 11:11:33 AM

Facility = Staunton River HS STP
Chemical = TRC
Chronic averaging period = 4
WLAa = 19
WLAc =
Q.L. = 1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 20
Variance = 144
C.V. = 0.6
97th percentile daily values = 48.6683
97th percentile 4 day average = 33.2758
97th percentile 30 day average= 24.1210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 19
Average Weekly limit = 19
Average Monthly LImit = 19

The data are:

20

6/29/2005 11:14:11 AM

Facility = Staunton River HS STP
Chemical = ammonia
Chronic averaging period = 30
WLAa = 30
WLAc =
Q.L. = 1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

9

VPDES Permit VA0063738
Staunton River High School STP
Reissuance August 2010

ATTACHMENT C

From 1995 permit reissuance - limit evaluation

1. DEQ Regional Desktop Dissolve Oxygen Model input and results.

2. Chart of BOD_5 Data from DMRs.

3. 4/20/95 Telephone log - Karen Stevens, WCRO permit writer with Dennis Overstreet, Maintenance Supervisor for Bedford County Schools.

4. Spreadsheet calculation of ammonia standards.

5. WLA.exe output (ammonia limit).

6. 90% pH determination from plant operational logs.

****

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Staunton River High School STP DISCHARGE

TO Shoulder Run, UT

THE SIMULATION STARTS AT THE Staunton River High School STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .0256 MGD cBOD5 = 19 Mg/L TKN = 5 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS BROKEN INTO 2 SEGMENTS
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.779 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	0.47	0.385	20.000	1.600	0.500	0.000	915.00	21.00	8.644
2	0.17	0.406	20.000	1.600	0.500	0.000	885.00	21.00	8.653

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

SHOULDR3.MOD

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.0256 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	47.500	8.660
0.100	0.100	5.607	46.253	8.586
0.200	0.200	5.352	45.039	8.513
0.300	0.300	5.195	43.857	8.440
0.400	0.400	5.109	42.706	8.368
0.470	0.470	5.080	41.918	8.318

FOR THE TRIBUTARY AT THE END OF SEGMENT 1
FLOW = .0297 MGD cBOD5 = 2 Mg/L TKN = 0 Mg/L D.O. = 7.7794 Mg/L

FLOW FROM INCREMENTAL DRAINAGE AREA = 0.0000 MGD

********** RESPONSE FOR SEGMENT 2 **********

TOTAL STREAMFLOW = 0.0553 MGD
(Including Discharge, Tributaries and Incremental D.A. Flow)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.470	6.530	22.091	3.851
0.100	0.570	6.593	21.541	3.819
0.166	0.636	6.632	21.186	3.799

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
03-23-1995 15:38:02

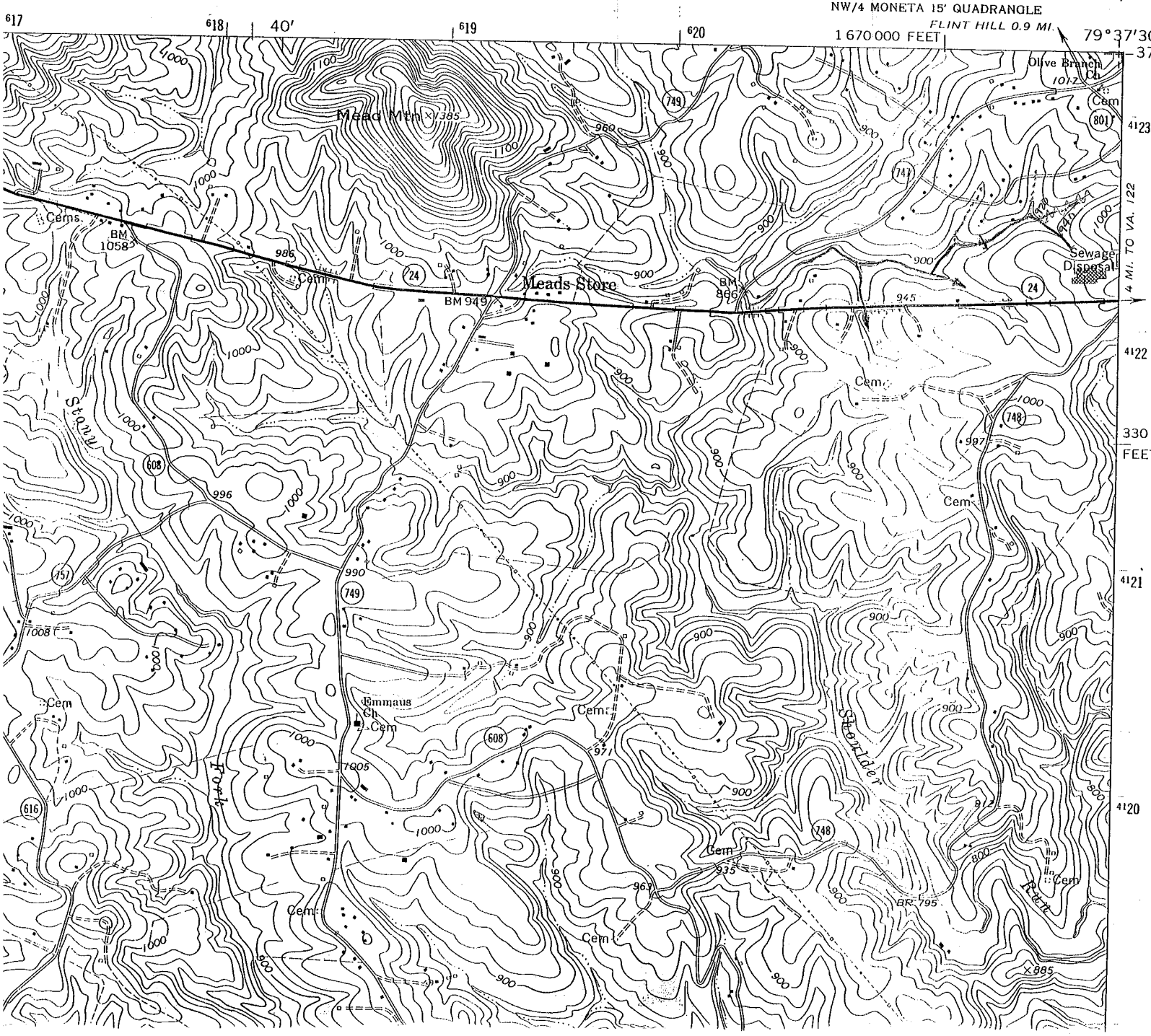
DATA FILE = SHOULDR3.MOD

GINIA
RCES

DO NOT REMOVE

GOODVIEW QUADRANGLE
VIRGINIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

NW/4 MONETA 15' QUADRANGLE



.28 mi
1500 FT.

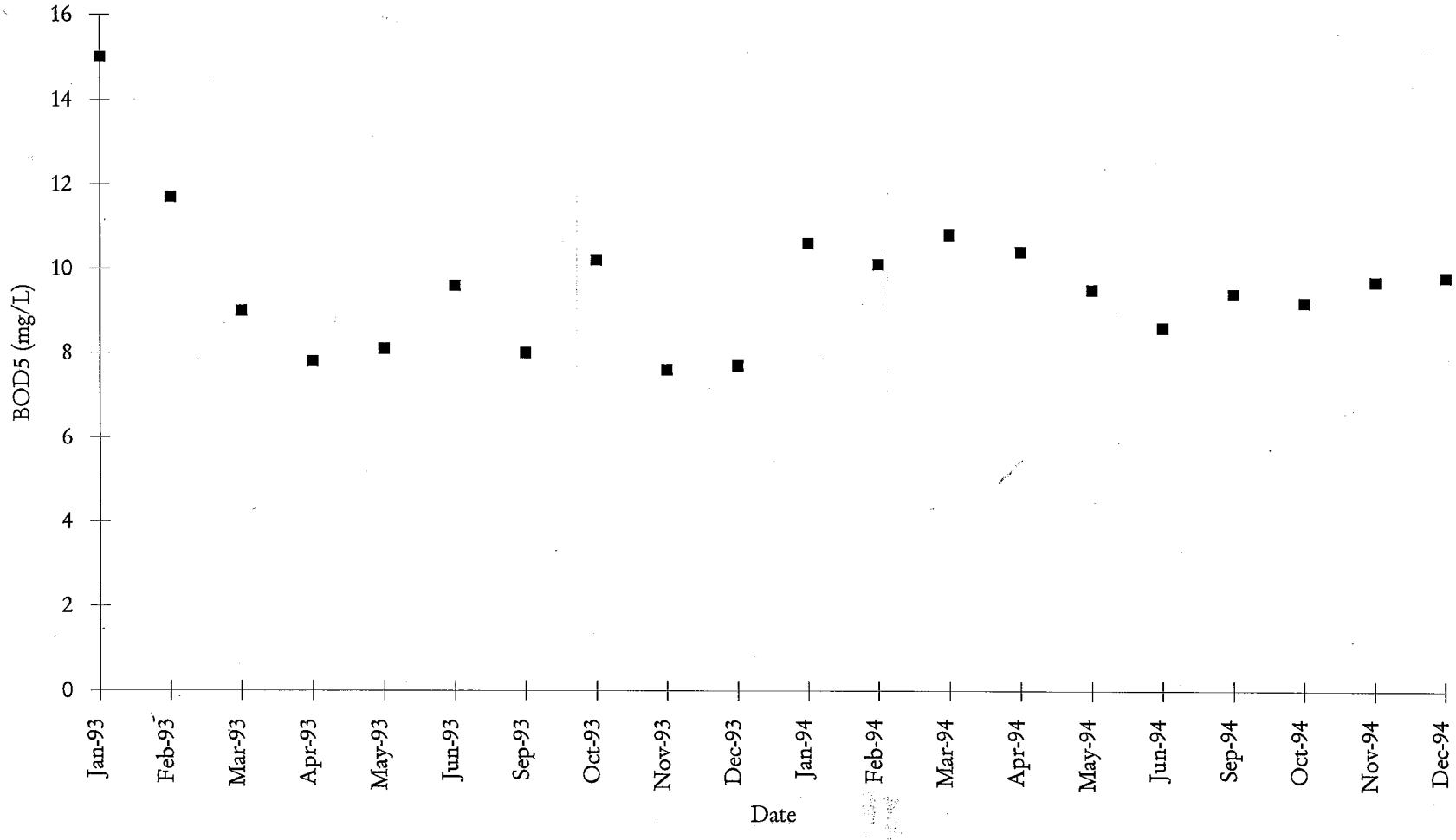
40 FT / 1520 FT = 0.027 FT/FT

6.5 in / 12000 in = 1000 FT

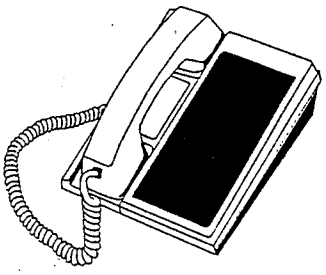
2500 FT
FALL = 940 to 890

50 / 2520 = 0.02 FT/FT

STAUNTON RIVER HIGH SCHOOL BOD5



SRHS.BOD Chart 1



TELEPHONE LOG for Karen Stevens

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION REGIONAL OFFICE

(703) 562-3666

DATE: 4/26/95

TIME: 4:00

CONTACT: Dennis Overstreet, Staunton River R.S. Maint. Supv.

CALL IN/OUT:

PHONE #: (703) 586-1045

SUBJECT: Property line near outfall

COMMENTS: Mr. Overstreet said the property line is roughly 10-15 FT from the outfall. The effluent, therefore, only flows a short distance before going into the next property.

Effluent Limitation Analysis For: Staunton River High School (VA0063738) Date: 03/23/94

Stream:	Shoulder Run,UT	Effluent Information					
Mean Hardness (mg/L) =		Mean Hardness=	50	Hardness:	50	Mix Hardness=	50
Stream NH3 (mg/L)	0	NH3 (mg/L)=	9	7Q10 Ratio:	1		
90% Temperature		90% Temp.=	21	1Q10 Ratio:	1.00	* WLAa	
90% pH		90% pH=	7.9	1/2 7Q10 Ratio:	1.00	Coefficient =	0.99
7Q10-MGD	0	Discharge-MGD=	0.0256	1/2 1Q10 Ratio:	1.00	Acute IWC =	1.00
1Q10-MGD	0	*Coefficient of		Harmonic ratio:	1.00	Chronic IWC =	1
Harmonic mean (carcinogen):	0	Variability=	0.6	30Q5 ratio:	1.00		
30Q5 Flow (Non-carcinogen):	0						
R(iver),L(ake) or S(torm):	R						
Trout Present? (Y/N)	n						
Public Water Supply(Y/N):	y						

Freshwater Ammonia Toxicity Standards (based on VR680-21-00)
(OK as of 3/91)
I. Perform Mass Balance for final Ammonia Concentrations and pH:

	Flow (MGD)	Total NH3-N (mg/L)	pH*	Temp. (C)	[H+]
Stream	0.000	0.000	0.00	0.0	1.00E+00
POTW:	0.026	1.410	7.90	21.0	1.26E-08
Mix:	0.026	1.410	7.90	21.0	1.26E-08

Trout Present? (y/n) ------> n <---
Chronic/Acute Std.? (C/A)--> c <--- = 1.410 mg/l

* The pH mix does not take into account alkalinity.

	Chronic (4-Day)
Trout Present? (y/n)	N
90th Percentile Temp., C:	21.0
90th Percentile pH:	7.90
TCAP	20
FT (final temperature):	1
FPH	1.0529822
RATIO	13.50
pKa	9.3693
Un-ionized Ammonia, mg/L -NH3:	0.0563
Fraction of Un-ionized Ammonia:	0.03282
Total Ammonia, mg/L as NH3:	1.71
Total Ammonia, mg/L as N:	1.41
Standard Selected	1.410

Freshwater Ammonia Toxicity Standards (based on VR680-21-00)
(OK as of 3/91)
I. Perform Mass Balance for final Ammonia Concentrations and pH:

	Flow (MGD)	Total NH3-N (mg/L)	pH*	Temp. (C)	[H+]
Stream:	0.000	0.000	0.00	0.0	1.00E+00
POTW:	0.026	6.629	7.90	21.0	1.26E-08
Mix:	0.026	6.629	7.90	21.0	1.26E-08

Trout Present? (y/n) ------> n <--- Y or N ONLY!
Chronic/Acute Std.? (C/A)--> a <--- = 6.629 mg/l

* The pH mix does not take into account alkalinity.

	Acute (1-Hr)
Trout Present? (y/n)	N
90th Percentile Temp., C:	21.0
90th Percentile pH:	7.90
TCAP	25
FT (final temperature):	0.9332543
FPH	1.0529822
RATIO	#N/A
pKa	9.37
Un-ionized Ammonia, mg/L as NH3:	0.26
Fraction of Un-ionized Ammonia:	0.0328243
Total Ammonia, mg/L as NH3:	8.06
Total Ammonia, mg/L as N:	6.63
Standard Selected	6.629

Analysis of the Staunton River High School STP effluent data for ammonia

The statistics for ammonia are:

Number of values	= 1
Quantification level	= .2
Number < quantification	= 0
Expected value	= 2
Variance	= 1.44
C.V.	= .6
97th percentile	= 4.866835
Statistics used	= Reasonable potential assumptions - Type 2 data

The WLAs for ammonia are:

Acute WLA	= 6.629
Chronic WLA	= 1.41
Human Health WLA	= ----

The limits are based on chronic toxicity and 1 samples/month.

Maximum daily limit	= 2.06223
Average monthly limit	= 2.06223

It is recommended that only the maximum daily limit be used.

DATA
2

DATUM FROM BENNIE'S MHP APPLICATION — VERY SIMILAR FACILITY.
NO DATA SUPPLIED BY SRHS.

SRHS Effluent pH Data (SORTED)

Date	pH	Count	Date	pH	Count	Date	pH	Count	Date	pH	Count	Date	pH	Count	Date	pH	Count	Date	pH	Count
1/26/93	6.7	1	3/10/93	7.2	48	10/31/94	7.4	95	04/21/94	7.5	142	04/22/94	7.6	189	04/13/94	7.7	236	09/08/93	7.9	283
2/15/93	6.7	2	3/19/93	7.2	49	06/01/94	7.4	96	03/01/94	7.5	143	04/29/94	7.6	190	1/6/93	7.8	237	09/13/93	7.9	284
03/17/94	6.7	3	3/31/93	7.2	50	06/13/94	7.4	97	1/11/93	7.6	144	1/7/93	7.7	191	1/12/93	7.8	238	09/15/93	7.9	285
03/21/94	6.7	4	4/22/93	7.2	51	05/17/94	7.4	98	1/15/93	7.6	145	1/8/93	7.7	192	1/19/93	7.8	239	09/20/93	7.9	286
03/31/94	6.7	5	4/23/93	7.2	52	05/18/94	7.4	99	4/29/93	7.6	146	1/13/93	7.7	193	5/19/93	7.8	240	09/23/93	7.9	287
1/25/93	6.8	6	5/3/93	7.2	53	1/14/93	7.5	100	5/6/93	7.6	147	1/18/93	7.7	194	6/7/93	7.8	241	09/24/93	7.9	288
2/11/93	6.8	7	10/20/94	7.2	54	1/21/93	7.5	101	5/10/93	7.6	148	1/20/93	7.7	195	09/09/93	7.8	242	09/29/93	7.9	289
2/12/93	6.8	8	05/11/94	7.2	55	2/1/93	7.5	102	5/11/93	7.6	149	5/18/93	7.7	196	09/10/93	7.8	243	09/30/93	7.9	290
2/17/93	6.8	9	05/31/94	7.2	56	3/17/93	7.5	103	5/13/93	7.6	150	5/20/93	7.7	197	09/21/93	7.8	244	10/05/93	7.9	291
2/23/93	6.8	10	03/07/94	7.2	57	3/23/93	7.5	104	5/21/93	7.6	151	5/25/93	7.7	198	09/22/93	7.8	245	10/07/93	7.9	292
2/25/93	6.8	11	03/23/94	7.2	58	3/24/93	7.5	105	5/24/93	7.6	152	6/3/93	7.7	199	09/28/93	7.8	246	10/12/93	7.9	293
4/6/93	6.8	12	03/24/94	7.2	59	3/26/93	7.5	106	5/27/93	7.6	153	10/14/93	7.7	200	10/13/93	7.8	247	10/20/93	7.9	294
4/19/93	6.8	13	03/28/94	7.2	60	4/27/93	7.5	107	6/1/93	7.6	154	10/15/93	7.7	201	10/18/93	7.8	248	11/03/93	7.9	295
03/14/94	6.8	14	2/2/93	7.3	61	4/28/93	7.5	108	11/11/93	7.6	155	10/25/93	7.7	202	10/21/93	7.8	249	12/06/93	7.9	296
03/15/94	6.8	15	2/4/93	7.3	62	5/5/93	7.5	109	11/12/93	7.6	156	11/02/93	7.7	203	10/22/93	7.8	250	12/13/93	7.9	297
03/30/94	6.8	16	2/9/93	7.3	63	5/7/93	7.5	110	11/18/93	7.6	157	11/08/93	7.7	204	10/26/93	7.8	251	12/16/93	7.9	298
1/29/93	6.9	17	3/3/93	7.3	64	5/12/93	7.5	111	11/22/93	7.6	158	11/10/93	7.7	205	10/27/93	7.8	252	09/08/94	7.9	299
2/10/93	6.9	18	3/9/93	7.3	65	5/17/93	7.5	112	11/23/93	7.6	159	11/15/93	7.7	206	11/01/93	7.8	253	09/09/94	7.9	300
2/16/93	6.9	19	3/12/93	7.3	66	5/26/93	7.5	113	12/01/93	7.6	160	11/17/93	7.7	207	11/04/93	7.8	254	09/13/94	7.9	301
2/24/93	6.9	20	3/18/93	7.3	67	5/28/93	7.5	114	12/01/94	7.6	161	11/19/93	7.7	208	11/05/93	7.8	255	05/03/94	7.9	302
3/2/93	6.9	21	3/29/93	7.3	68	6/2/93	7.5	115	12/09/94	7.6	162	12/02/93	7.7	209	11/09/93	7.8	256	05/04/94	7.9	303
4/7/93	6.9	22	3/30/93	7.3	69	11/24/93	7.5	116	12/13/94	7.6	163	12/03/93	7.7	210	11/16/93	7.8	257	04/25/94	7.9	304
4/9/93	6.9	23	4/1/93	7.3	70	11/29/93	7.5	117	12/14/94	7.6	164	12/10/93	7.7	211	12/07/93	7.8	258	04/26/94	7.9	305
05/12/94	6.9	24	4/21/93	7.3	71	11/30/93	7.5	118	12/19/94	7.6	165	12/11/93	7.7	212	12/08/93	7.8	259	1/5/93	8	306
05/13/94	6.9	25	5/4/93	7.3	72	11/03/94	7.5	119	12/20/94	7.6	166	12/05/94	7.7	213	12/09/93	7.8	260	6/10/93	8	307
03/11/94	6.9	26	10/13/94	7.3	73	11/04/94	7.5	120	11/01/94	7.6	167	12/07/94	7.7	214	12/14/93	7.8	261	6/15/93	8	308
03/16/94	6.9	27	10/18/94	7.3	74	11/08/94	7.5	121	11/07/94	7.6	168	12/08/94	7.7	215	12/15/93	7.8	262	09/07/93	8	309
03/18/94	6.9	28	10/21/94	7.3	75	11/09/94	7.5	122	11/10/94	7.6	169	12/12/94	7.7	216	12/17/93	7.8	263	09/14/93	8	310
1/22/93	7	29	10/26/94	7.3	76	10/03/94	7.5	123	11/15/94	7.6	170	12/16/94	7.7	217	12/06/94	7.8	264	09/17/93	8	311
1/28/93	7	30	05/16/94	7.3	77	10/06/94	7.5	124	11/18/94	7.6	171	12/21/94	7.7	218	12/15/94	7.8	265	09/27/93	8	312
2/8/93	7	31	05/30/94	7.3	78	10/07/94	7.5	125	11/28/94	7.6	172	11/14/94	7.7	219	11/21/94	7.8	266	10/04/93	8	313
2/18/93	7	32	03/04/94	7.3	79	10/12/94	7.5	126	10/04/94	7.6	173	11/16/94	7.7	220	11/23/94	7.8	267	10/08/93	8	314
2/22/93	7	33	03/08/94	7.3	80	10/17/94	7.5	127	10/10/94	7.6	174	11/17/94	7.7	221	09/12/94	7.8	268	10/19/93	8	315
4/5/93	7	34	03/25/94	7.3	81	10/25/94	7.5	128	10/28/94	7.6	175	11/22/94	7.7	222	09/14/94	7.8	269	10/28/93	8	316
4/8/93	7	35	2/3/93	7.4	82	10/27/94	7.5	129	09/19/94	7.6	176	11/29/94	7.7	223	09/16/94	7.8	270	09/07/94	8	317
03/29/94	7	36	3/5/93	7.4	83	06/02/94	7.5	130	09/21/94	7.6	177	11/30/94	7.7	224	09/22/94	7.8	271	05/05/94	8	318
2/19/93	7.1	37	3/11/93	7.4	84	06/03/94	7.5	131	09/30/94	7.6	178	10/11/94	7.7	225	09/27/94	7.8	272	6/9/93	8.1	319
3/1/93	7.1	38	3/22/93	7.4	85	06/08/94	7.5	132	06/06/94	7.6	179	09/15/94	7.7	226	05/02/94	7.8	273	6/14/93	8.1	320
4/2/93	7.1	39	3/25/93	7.4	86	06/14/94	7.5	133	06/09/94	7.6	180	09/20/94	7.7	227	05/09/94	7.8	274	09/16/93	8.1	321
4/20/93	7.1	40	4/26/93	7.4	87	06/15/94	7.5	134	06/10/94	7.6	181	09/23/94	7.7	228	05/23/94	7.8	275	10/06/93	8.1	322
4/30/93	7.1	41	5/14/93	7.4	88	06/16/94	7.5	135	05/10/94	7.6	182	09/26/94	7.7	229	04/07/94	7.8	276	10/11/93	8.1	323
03/09/94	7.1	42	11/02/94	7.4	89	05/19/94	7.5	136	05/20/94	7.6	183	09/28/94	7.7	230	04/11/94	7.8	277	12/20/93	8.1	324
03/10/94	7.1	43	11/11/94	7.4	90	05/25/94	7.5	137	05/26/94	7.6	184	09/29/94	7.7	231	04/27/94	7.8	278	6/11/93	8.2	325
03/22/94	7.1	44	10/05/94	7.4	91	05/27/94	7.5	138	04/01/94	7.6	185	06/07/94	7.7	232	04/28/94	7.8	279	10/01/93	8.2	326
2/5/93	7.2	45	10/14/94	7.4	92	04/14/94	7.5	139	04/12/94	7.6	186	05/24/94	7.7	233	1/4/93	7.9	280	05/06/94	8.2	327
3/4/93	7.2	46	10/19/94	7.4	93	04/15/94	7.5	140	04/18/94	7.6	187	04/06/94	7.7	234	6/4/93	7.9	281			
3/8/93	7.2	47	10/24/94	7.4	94	04/20/94	7.5	141	04/19/94	7.6	188	04/08/94	7.7	235	6/8/93	7.9	282			

← 90th %ile